

**UTILITY  
PATENT APPLICATION  
TRANSMITTAL**

(Only for new nonprovisional applications under 37 C.F.R. § 1.53(b))

Attorney Docket No. 109140-0001

First Inventor or Application Identifier Jeffrey Delaney et al.

Title MULTI-MODE MESSAGE ROUTING AND MANAGEMENT

Express Mail Label No. EL056800917US

**APPLICATION ELEMENTS**

ADDRESS TO:

Assistant Commissioner for Patents  
Box Patent Application  
Washington, DC 20231☒ \*Fee Transmittal Form (e.g., PTO/SB/17)

(Submit an original and a duplicate for fee processing)

☒ Specification [Total Pages 48]

(preferred arrangement set forth below)

- Descriptive title of the Invention
- Cross References to Related Applications
- Statement Regarding Fed sponsored R & D
- Reference to Microfiche Appendix
- Background of the Invention
- Brief Summary of the Invention
- Brief Description of the Drawings (if filed)
- Detailed Description
- Claim(s)
- Abstract of the Disclosure

3. ☒ Drawing(s) [Total Sheets 5]

4. Oath or Declaration [Total Pages 5]

a. ☒ Newly executed (original copy)b. ☐ Copy from a prior application (37 C.F.R. § 1.63(d))

(for continuation/divisional with Box 17 completed)

[Note Box 5 below]

**DELETION OF INVENTOR(S)**

Signed statement attached deleting inventor(s) named in the prior application, see 37 C.F.R. §§ 1.63(d)(2) and 1.33(b).

5. ☐ Incorporation By Reference (useable if Box 4b is checked)  
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered to be part of the disclosure of the accompanying application and is hereby incorporated by reference therein

6. ☐ Microfiche Computer Program (Appendix)

7. Nucleotide and/or Amino Acid Sequence Sequence Submission

((if applicable, all necessary))

- a. ☐ Computer Readable Copy
- b. ☐ Paper Copy (Identical to computer copy)
- c. ☐ Statement verifying identity of above copies

**ACCOMPANYING APPLICATION PARTS**8. ☒ Assignment Papers (cover sheet & document(s))9. 37 C.F.R. § 3.73(b) ☒ Power of Attorney Statement (when there is an assignee)10. ☐ English Translation Document (if applicable)11. ☒ Information Disclosure Statement (IDS)/PTO-1449 ☒ Copies of IDS Citations12. ☐ Preliminary Amendment13. ☒ Return Receipt Postcard (MPEP 503) (Should be specifically itemized)14. ☒ \*Small Entity Statement(s) ☐ Statement filed in prior application, Status still proper and desired ((PTO/SB/09-12))15. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed)16. ☐ Other:

\*NOTE FOR ITEMS 1 & 14: IN ORDER TO BE ENTITLED TO PAY SMALL ENTITY FEES, A SMALL ENTITY STATEMENT IS REQUIRED (37 C.F.R. § 1.27). EXCEPT IF ONE FILED IN A PRIOR APPLICATION IS RELIED UPON (37 C.F.R. § 1.28).

17. If a CONTINUING APPLICATION, check appropriate box and supply the requisite information below and in a preliminary amendment.

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: /

Prior application Information: Examiner

Group/Art Unit:

**18. CORRESPONDENCE ADDRESS**☐ Customer Number or Bar Code Labelor ☒ Correspondence address below

(Insert Customer No. or Attach bar code label here)

Name Steven J. Frank

Address Cesari and McKenna  
30 Rows Wharf

City Boston

State MA

Zip Code 02110

Country U. S. A.

Telephone (617) 951-2500

Fax (617) 951-3927

Name (Print/Type) Steven J. Frank

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Signature

Date February 1, 2000

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In Re The Application of:	)	
Jeffrey Delaney et al.	)	
	)	Examiner: Not Yet Assigned
Serial No.: Not Yet Assigned	)	
	)	
Filed: Herewith	)	Art Unit: Not Yet Assigned
	)	
For: MULTI-MODE MESSAGE ROUT-	)	
ING AND MANAGEMENT	)	

**DECLARATION BY ASSIGNEE CLAIMING  
SMALL ENTITY STATUS UNDER 37 CFR §§1.9(f) and 1.27(b)**

As an authorized officer of the below named assignee, I hereby declare that the assignee qualifies as a small entity as defined in 37 CFR §1.9(c) for purposes of paying reduced fees under §41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention described in the specification identified above, and referred to as Cesari and McKenna file number 109140-0001.

The below named assignee has not assigned, granted, conveyed, or licensed and am under no obligation under contract or law to assign, grant, convey, or license any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR §1.9(c) if that person had made the invention, or to any concern that did not qualify as a small business concern under 37 CFR §1.9(d) or a nonprofit organization under 37 CFR §1.9(e).

Each person, concern, or organization to which the below named assignee has assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

None

The below named assignee acknowledges the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small-entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR §1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Prizma, Inc.

By: 

Title: COO

Date: 1/27/00

**UNITED STATES PATENT APPLICATION**

*of*

**JEFFREY DELANEY  
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*for*

**MULTI-MODE MESSAGE  
ROUTING AND MANAGEMENT**



## FIELD OF THE INVENTION

The present invention relates to communication services, and in particular to delivery of messages to selected recipients through one or more specified communication modes.

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## BACKGROUND OF THE INVENTION

Thanks to improvements in technology and widespread consumer interest, once-exotic forms of communication have become commonplace, and today the average consumer has access to a broad array of communications services. The Internet and wireless telephony, once the preserve of an elite few, now routinely supplement traditional telephone services and are frequently supplied by the same carriers. Even inexpensive home computers now include facsimile capability. Businesses employing mobile employees can furnish them with economical pagers that incorporate advanced features, such as text transmission and Internet access.

The sheer proliferation of communication options, while greatly improving access and convenience, has engendered problems as well. The existence of a communication channel does not ensure that the recipient of a message will be "listening" to that particular channel at a given time, yet the sender of a message has no way to know this. Indeed, more channels of

communication traffic mean more demands on the attentions of potential recipients, who, feeling besieged by the assault of e-mail, voice mail, pages, etc., may simply inactivate some communication devices at different times. Message senders, therefore, are faced with the choice of risking non-delivery  
5 of their messages, or painstakingly re-transmitting a message on every possible mode of communication modality.

It may also be difficult to transmit the same message to multiple recipients. While a single e-mail message, sent once, can reach an unlimited number of destinations, phone messages must be repeated for each call.

10 Moreover, different recipients may have access to different types of communication channels; perhaps some recipients can be reached efficiently only by e-mail, others by fax, and still others by page.

The integration of communication input devices also raises the prospect of messages having multiple forms of content. Today, a single  
15 message may include input from a variety of sources (e.g., voice and text); transmitting such a message by traditional means may be quite cumbersome, involving multiple separate transmissions that must be coordinated or difficult “packaging” of the different inputs into a single message.

## DESCRIPTION OF THE INVENTION

### Brief Summary of the Invention

The present invention facilitates transmission of messages composed on one or more input devices to a single or multiple recipients by means of one or plural communication modalities. Such communication modalities may include, for example, conventional or wireless telephone, facsimile transmission, pager, e-mail, postal mail or courier. Thus, a message may be directed to a single recipient via multiple modalities, such as e-mail and fax, in order to ensure the earliest possible receipt of the message; or a may be directed to multiple recipients by a single modality or by different modalities (e.g., some recipients receive the message by e-mail, others by fax, others by phone). The invention may be configured to respond to defined "escalation" rules that specify conditions under which different delivery modalities may be sequentially employed. For example, the rules may specify that if there is no response to an e-mailed question within an hour, the recipient is to be telephoned. Moreover, in addition to alternative transmission modalities, the escalation rules may specify alternative recipients (as well as alternative modalities for those recipients). The escalation rules may also specify default contact methods, which may apply to specific individuals or to lists of recipients.

The invention may include functionality for determining whether a message has been received (e.g., telephone and e-mail polling), as well as automatic sender notification upon confirmation of receipt. Moreover, in addition to monitoring messages in order to confirm their receipt, the invention may facilitate recipients' responses. In this way, the invention can orchestrate multi-question surveys utilizing multiple communication modes; for example, individuals contacted directly can respond immediately, while others can respond later in accordance with instructions delivered to them—e.g., via a web site or by calling a toll-free number.

10 In addition, the invention supports messages having embedded questions that call for response by the recipient. Such responses, when received, may be communicated to the message sender and/or accumulated.

15 The invention may also facilitate scheduling of message delivery, on a mode-by-mode basis where appropriate. Scheduling may include delivery at a particular time or within a designated time window, or may involve preventing delivery during specified "black-out" periods. In some embodiments, scheduling may be automatic and based on considerations such as the recipient's time zone and the form of communication (e.g., to avoid awakening the recipient by telephone).



## Brief Description of the Drawings

The foregoing discussion will be understood more readily from the following detailed description of the invention, when taken in conjunction with the accompanying drawings, in which:

- 5           FIG. 1 schematically represents the basic approach of the invention;
- FIG. 2A is a flow diagram illustrating the basic messaging functions of the invention;
- FIG. 2B is an illustrative web page showing selection of contacts and distribution lists;
- 10          FIG. 2C is an illustrative web page for receiving media selections; and
- FIG. 2D is an illustrative web page showing tabulated receipt statuses and responses to an embedded question.

## Detailed Description of the Preferred Embodiments

- 15           The Internet, which can provide the communication medium of the present invention, is a worldwide “network of networks” that links millions of computers through tens of thousands of separate (but intercommunicating) networks. Via the Internet, users can access

tremendous amounts of stored information and establish communication linkages to other Internet-based computers.

Much of the Internet is based on the *client-server* model of information exchange. This computer architecture, developed specifically to

5 accommodate the "distributed computing" environment that characterizes the Internet and its component networks, contemplates a server (sometimes called the host) that services the requests of a large number of smaller computers, or clients, which connect to it. A server is typically a powerful workstation or mainframe computer, while the clients may be simple personal  
10 computers. Servers providing Internet access to multiple subscriber clients are referred to as "gateways"; more generally, a gateway is a computer system that connects two computer networks.

In order to ensure proper routing of messages between the server and the intended client, the messages are first broken up into data packets, each  
15 of which receives a destination address according to a consistent protocol, and which are reassembled upon receipt by the target computer. A commonly accepted set of protocols for this purpose are the Internet Protocol, or IP, which dictates routing information; and the transmission control protocol, or TCP, according to which messages are actually broken  
20 up into IP packets for transmission for subsequent collection and reassembly. TCP/IP connections are quite commonly employed to move data across telephone lines.

The Internet supports a large variety of information-transfer protocols. The World Wide Web (hereafter simply the “web”) represents one of these. Web-accessible information is identified by a uniform resource locator or “URL,” which specifies the location of the file in terms of a specific

5 computer and a location on that computer. Any Internet “node” — that is, a computer with an IP address (e.g., a server permanently and continuously connected to the Internet, or a client that has connected to a server and received a temporary IP address) — can access the file by invoking the proper communication protocol and specifying the URL. Typically, a URL has the

10 format *http://<host>/<path>*, where “http” refers to the HyperText Transfer Protocol, “host” is the server’s Internet identifier, and the “path” specifies the location of the file within the server. Each “web site” can make available one or more web “pages” or documents, which are formatted, tree-structured repositories of information, such as text, images,

15 sounds and animations.

An important feature of the web is the ability to connect one document to many other documents using “hypertext” links. A link appears unobtrusively as an underlined portion of text in a document; when the viewer of this document moves his cursor over the underlined text and

20 clicks, the link— which is otherwise invisible to the viewer— is executed and the linked document retrieved. A link may also be associated with a two-dimensional bounded region of a document.

Hypertext and searching functionality on the web is typically implemented on the client machine via a web browser. As shown in FIG. 1, a client system 110, belonging to (or operated by) a message sender or recipient, is implemented as a personal computer having a network interface 112 and, running on the system as an active process, a web browser 115. Network interface 112 connects, generally via telephone dial-up, to a gateway or other Internet access provider. As a result, the client machine 110 becomes a node on the Internet, capable of exchanging data with other Internet computers. (Naturally, computer 110 also contains various conventional components, i.e., system storage, an operating system and a graphical user interface, and a keyboard and/or position-sensing device (e.g., a mouse) for accepting input from the customer. For simplicity of presentation, these are not shown.) Browser 115 controls the content presented on a display 117. With the client connected as an Internet node, the browser utilizes URLs—provided either by the customer or a link—to locate, fetch and display the specified documents. “Display” in this sense can range from simple pictorial and textual rendering to real-time playing of audio and/or video segments or alarms, mechanical indications, printing, or storage of data for subsequent display.

By means of the URL, browser-originated messages reach a server system 125 (which implements the functions of the invention as described below) via the Internet. The browser passes the URL to a protocol handler

on server 125, which retrieves and transmits to the client machine 110 rendering instructions defining the requested web page. The browser causes the received information to be cached (usually on a hard disk) on the client computer. A web page may be written in HyperText Markup Language, or HTML, which breaks the document into syntactic portions (such as headings, paragraphs, lists, etc.) that specify layout and contents; and/or in a scripting language such as Java.

Suppose, for example, that the client user instructs the client-resident browser 115 to obtain a document having the URL *http://host/file.html*. The browser contacts the HTTP server running on "host," and requests the document *file.html*. The server finds this document and sends it according to the proper Internet protocol, along with a Multipurpose Internet Mail Extension or "MIME" identifier that specifies the document's type. When client 110 receives the document, browser 115 examines the MIME to determine whether it is capable of autonomously displaying the document, or whether an external resource (e.g., a specialized viewer to display video segments) is necessary. In a simple case, the document might contain text and graphics specified in HTML, and specify an image residing in a different file on a different server or on the same server. The browser 115 renders the document in accordance with the HTML instructions and requests the image, displaying it in the document as specified by the instructions when the image arrives.

Server system 125, which is illustrated in greater detail, may be implemented as a single workstation or as a network of server computers, depending on the activity level and included functionality. For explanatory purposes, server 125 is represented as a single machine that includes a network interface 127 continuously connected to the Internet. Network interface 127 and the other internal components of server 125 intercommunicate over a main bidirectional bus 130 (which may be a physical bus in a single hardware device, or can instead represent a network such as a LAN or a WAN). The main sequence of instructions effectuating the functions of the invention and facilitating interaction among clients, server 125, the Internet, and other modes of communication reside on a mass storage device (such as a hard disk or optical storage unit) 132 as well as in a main system memory 134 during operation. Execution of these instructions and effectuation of the functions of the invention is accomplished by a central-processing unit ("CPU") 136.

A group of functional modules that control the operation of CPU 136 and effectuate the operations of the invention is shown conceptually as located in system memory 134; once again, however, it should be stressed that this organization is for explanatory purposes. The various modules and servers may indeed be realized as active processes running on a single machine, but functionality may instead be distributed among multiple

machines (or processors within a single machine), once again depending on the activity level and included capabilities.

An operating system 140 directs the execution of low-level, basic system functions such as memory allocation, file management, and operation of mass storage devices 132. At a higher level, a control block 142, implemented as a series of stored instructions, manages interaction among the various functional components of the server and ensures proper routing of data thereamong.

Server 125 is capable of communicating with customers in various modes, primarily by means of the web and electronic mail. Accordingly, a web and e-mail (hereafter "web/mail") server block 145 receives communications from customers via the web and/or e-mail, and transmits proper responses via a network interface 147. All interactions with the customer take place via web/mail server 145 or, in the case of telephone communication, via a telephony server 147; of course, customer interaction using other media or formats is possible (e.g., programmatic interfaces for direct connection to third-party applications), and would be handled by an appropriate server. The pattern of interaction with the customer, the content of transmissions to the customer's computer, and functionality associated with the customer's address book are handled by a transaction server 150. Transaction server 150 has access to various databases, collectively indicated at 152; these databases, discussed in greater detail below, are

ordinarily stored on devices 132 and accessed as necessary. Depending on the customer's requests and interaction with server 125 via browser 115, transaction server 150 selects or causes assembly of various web pages collectively indicated at 155, and causes web/mail server 145 to serve the pages to the client 110 via network interface 127. During an initial interaction with a customer, transaction server 150 obtains payment and identification information, which is stored in the customer's record on a database 152. Credit-card validation and billing for services performed by the invention is handled by a billing server 160.

The various functions performed by the invention, which result in different patterns of interaction with customers, will now be described.

#### *1. Media Conversion and Basic Message Transmission*

Web/mail server 145 and telephony server 147, as well as any other media servers, represent the interface servers that provide connecting points for customers. Customer requests are passed from an interface server to transaction server 150, which guides the message-composition process via the interface server(s) (i.e., transaction server 150 returns information to the interface servers, instructing them as to the proper questions to ask the customer). Once the customer has issued sufficient commands and provided sufficient content to fully specify a message (i.e., the message body, the recipient(s), desired delivery methods, and message options such as delivery



scheduling and/or escalation rules), a message "job" is created and stored in a database 152. The job is passed to a job queue server 165, which is responsible for implementing and scheduling all message jobs.

At this point, the message remains in the format in which it was composed. As noted previously, however, the invention is capable of receiving messages, via the interface servers, in one format and transmitting them in a different, customer-selected format. The functions of media conversion and message assembly are performed by a series of message delivery servers, collectively illustrated at 167, dedicated thereto. The appropriate message delivery server 167 converts messages to the specified format and causes their transmission, via the designated communication medium, by means of a corresponding device driver selected from among a suite of drivers. The drivers operate a series of transmission devices, which include network interface 127 for e-mail and/or web-based message delivery; a telephone interface 170 for message transmission by telephone, facsimile, pager, or handheld wireless device (although it should be noted that pager and wireless transmission can occur through network interface 127); and a document-generation module 172 for message transmission by postal mail or overnight courier.

The timing of message transmission is governed by job queue server 165. In response to the customer's authorization to send a message, job queue server 150 triggers the conversion and transmission operations just

discussed. Job queue server 165 also contains (or, as shown for illustrative purposes, communicates with) a scheduling module 180, which can orchestrate transmission of messages at customer-specified times based on the computer's internal clock.

5           The basic operation of these components is set forth in FIG. 2A. In a first step 200, the customer and the desired recipients are identified. Each customer is represented in a customer database 152a. Associated with each customer record is an "address book," i.e., a list of contacts (i.e., potential recipients) from which the customer may select. Alternatively, the customer  
10       may enter data for a new contact not yet in the address book, in which case the contact is added prior to transmission of the message. Accordingly, the entries in a customer's address book may accumulate passively, as messages are sent; or may be organized and updated by the customer independent of actual message transmission.

15           Preferably, database 152b allows address books to be organized into distribution lists, as shown in FIG. 2B. In this way, customers are afforded the opportunity to group contacts into categories meaningful for purposes of message routing. For example, in FIG. 2B, the illustrated distribution lists include a team responsible for a particular account, headquarters, and various  
20       regions. These categories, defined by the customer, collect contacts likely to receive similar messages. Selection of one of the distribution lists results in individually selectable display of the contacts within that list, and the

customer may indicate all or a subset of those contacts as recipients of a message.

A recipient's data record may include data for the following fields:

name; telephone number (home and work, which can be tried sequentially);

- 5 cellular phone number; facsimile number; postal address; e-mail address; pager number; links to one or more distribution lists; delivery restrictions (e.g., "blackout" periods during which the recipient will not wish to receive telephone calls, or allowed time windows for message transmission by specified modalities); escalation rules (described below); records of messages
- 10 sent and receipt status; a category field, i.e., a label that facilitates grouping of contacts for purposes of searching and distribution; and company/job title information. Thus, customers may search their address books or distribution lists (or organize distribution lists) in various ways. Most directly, transaction
- 15 server 150 will have database-search capability allowing customers to sort contacts by category field and search within a selected field. A field may group contacts geographically (such as "headquarters" or "eastern region") or in any other way meaningful to the customer. Moreover, a contact field can itself be further broken down into subfields, e.g., by communication modality or other criteria. Each contact field or subfield can itself represent a
- 20 distribution list (so that, for example, a customer may direct e-mail to those contacts within the eastern region sublist who have e-mail capability).

In step 205, a message is received from a customer, typically by means of a web page 155, and in step 210, the customer indicates the medium (or media) by means of which the message is to be transmitted. These steps are ordinarily accomplished through the use of web pages 155 that are configured to receive message text and to respond to selection of radio buttons or other indicia in order to determine the customer's selections. The text and selections are processed by transaction server 150, e.g., by means of a script running as an active process therein. As noted above, each customer receives a record in a customer database, which may also include an address list of frequent message recipients (along with data that facilitates routing of messages to these individuals).

A representative web page for receiving media selections is illustrated in FIG. 2C. Using a mouse or other position-sensing device, the customer clicks to place check marks next to the media by which the message will be sent. The message may be sent via all indicated media, or, as discussed in greater detail below, in accordance with customer-defined "escalation rules" specifying the use of different media only as necessary to achieve a single successful delivery of the message.

In step 220, the format of a received message— typically plain text, if received via a web page— is converted into the format appropriate to each designated transmission medium. For example, in the case of a message to be delivered by e-mail, the text is combined with header information

specifying the recipient's electronic address; in the case of facsimile transmission, the text is copied into a cover-page document (e.g., by means of a word-processing application resident on server block 165); and in the case of a letter to be delivered by postal mail or courier, the text is copied into a message or letter format and an envelope or courier pouch prepared. Plain text may also be transmitted to handheld wireless devices (such as so-called "personal digital assistants" or wireless telephones with text-reception capability) by means of telephone interface 170.

More complex modes of processing are also possible. Server block 165 may contain a text-to-speech conversion module, enabling customer-provided text to be transmitted by voice to the recipient by means of telephone interface 170. Conversely, and with renewed reference to FIG. 1, telephony server 175 may be configured to respond to spoken customer commands, allowing the customer to compose and address a message by telephone (i.e., by communicating with server 125 by means of telephone interface 170). For example, through interaction with transaction server 150, the customer may select delivery of a voice message by telephone. To facilitate the customer's communication of the voice message to server 125, telephone interface 170 may be accessed by means of a toll-free number and an access code provided to the customer, via the web, upon selection of the voice-message option. When the customer calls the toll-free number, a messaging system prompts the customer to key in the access code, which

causes telephony server to record the message and associate it with the customer's database record for transmission to the designated recipient(s) (and for subsequent billing).

In still more complex operational modes, the invention may facilitate catenation of message— either as separate segments of the same format, or as segments encoded in different formats. In the case of audio messages, for example, a message delivery server 167 may append an audio “header” (typically a so-called “professional prompt”) and a “trailer” to the customer's message. Thus, when the recipient answers the telephone, the header portion of the message may tell him that he is about to receive a message from the customer, and the trailer portion may facilitate response (as explained in further detail below).

Message segments having different formats may be composed from a variety of input devices, or may originate as a single composite message with multiple components. For explanatory purposes, consider a simple composite message that includes an audio segment (e.g., a recorded message) and an image. The composite message may be received by server 125 from the customer as a single e-mail with two attachments (a .wav audio file and a .jpg image file) or as two separate e-mails; in either case, a single modality— electronic mail— is employed to deliver both components. Alternatively, the image component may be sent to server 125 by e-mail or by fax, and the audio portion recorded directly by the customer via telephone. (Once again,

server 125 may automatically append a header and/or trailer to the audio portion.)

In the former case, transaction server 150 associates e-mails containing components relating to the same eventual message, while job queue server 165 examines the e-mail messages to determine the formats of the different components. Depending on the customer's transmission selections, the different components may simply be attached to an e-mail message as separate files and transmitted to the recipient, or may instead be sent separately by different modalities. For example, suppose the audio component is an alert to police agencies concerning an escaped convict, and the image component is the convict's picture. Given the urgency of the situation, the message sender may wish to have the audio component transmitted by telephone to all commander-level personnel at municipal and state police departments within a defined region, and the image component sent to these departments by e-mail and also be fax. Assuming the message sender has organized a distribution list of commander-level personnel, the message sender simply checks those individuals he wishes to reach; alternatively, the commander-level list may be further broken down into sublists covering particular regions, in which case the message sender would merely select the region or regions of interest. The audio and video components are transmitted to the selected personnel as separate messages via the desired modalities.

It should be understood that the foregoing example highlights only two possible message formats. In fact, a single message can contain components representing any combination of formats (audio, graphics, video, image or other bitmap, text) received from the customer by means of multiple input devices (telephone, web transfer, e-mail, fax). The different formats can be collapsed into a single message (e.g., an image and text can be transmitted by fax), or can be transmitted by diverse modalities best suited to the formats.

In step 225, the driver (or drivers) appropriate to the selected form (or forms) of transmission is selected by a message delivery server 165. At this point the customer may be given a schedule of charges for delivery of the message according to the selected mode or mode of transmission, and given the opportunity to abort message transmission. If the customer decides to proceed, job queue server 165 causes each appropriate driver to activate an associated communication device (step 230) to communicate the message to the recipient. As described in greater detail below, server 125 may confirm that the recipient has in fact received the message (step 235), and communicate this information to the customer via a designated communication device (or devices).

## *2. Confirming Message Receipt*



Any of a variety of techniques can be used to assess whether and when a message is received. Many e-mail systems natively support receipt confirmation. Alternatively, a URL can be embedded in the message; when the recipient receives the e-mail and clicks on this URL, receipt is

5 automatically recorded. Moreover, the web page may contain questions inviting response by the recipient, who thereupon transmits the web page back to server 125 (in particular, to web/mail server block 145).

Hard-copy deliveries can be tracked through the courier or by means of a follow-up telephone call to the recipient, while for telephone messages, the

10 recipient can be asked to press a number to confirm receipt. In the context of telephone messages, it may be useful to detect whether a person or an answering machine has answered the phone. This determination can be used, for example, to select a proper audio header or even to choose

15 between alternative messages, which may differ depending whether the message is delivered to the recipient or a recording device; an answering machine, obviously, would not be asked to press a number to confirm receipt, nor would delivery typically be confirmed to the sender if the message was left on an answering machine. To implement answer

20 detection, telephony server 147 is programmed to monitor the level of noise on the line once a connection is established, distinguishing between a "silence" noise level and a "speech" level. If an individual answers, he or she will typically issue a short greeting; that is, the signal pattern of a human

answer is a short speech signal followed by silence. An answering machine, by contrast, will generally issue a long greeting ("Hello, you have reached the Smiths ..."). Based on the observed lengths of a sustained speech signal and an ensuing silence, telephony server 147 forms an initial guess as to whether a person or a machine has answered. If a person is guessed, telephony server 147 will play the audio header that prompts the answerer to press a touch-tone key, and if the proper touch-tone pulse is not detected, server 147 may revise its guess and assume that it is communicating with an answering machine.

The customer may be notified of successful message receipt in any of numerous ways. In the most easily implemented approach, e-mail is sent to the customer when the entire job is complete. The invention may, however, support other capabilities. If the message is urgent, for example, the customer may request immediate notification of successful delivery by a selected modality (telephone, pager, fax, etc.). In this case, when transaction server 150 records receipt of the message, it prepares a confirmation and sends it to the customer, via job queue server 165 and message delivery servers 167, according to the customer's media selection(s). Alternatively, the delivery may simply be recorded in the customer's database record, and the customer accorded access to the information via a web page 155 (that is, the customer sees a standardized delivery-status web page showing data drawn from the delivery field(s) of

the customer's data record). Because it is a simple matter to update the customer's data record immediately upon successful message receipt, the status shown in the accessed web page may be quite current.

If the customer has requested delivery to numerous individuals by various media, these may be grouped and presented as shown in FIG. 2D. Once again, although the format of the web page is standardized, it appears as a customer-specific page because of the message-specific information. This information is drawn, once again, from the fields of the customer's database record relating to the message and from the record created by transaction server 150 when the message was initially submitted.

### *3. Conducting Surveys*

FIG. 2D also illustrates the manner in which the invention can conduct a question-based survey, with the recipients' responses logged into a survey database 152c (see FIG. 2C) set up for this purpose. The customer can consult database 152c to view the status of the survey, with results tabulated (anonymously or with responder identification) by answer. As shown in FIG. 2D, a single question can be transmitted to numerous recipients by multiple modes, with responses presented in tabular form as they are received. Telephone recipients may be asked to respond by pressing a touch-tone keys corresponding to the desired response. Alternatively, telephony server 147 may be equipped with speech-recognition capability to

record (and interpret) spoken answers. For e-mail recipients, the message may include a URL to a web page which, as discussed above, contains the question and a facility for recording the recipient's response, which is transmitted to web/mail server block 145. Fax and pager recipients may simply be asked to call a toll-free number, which can feature an automated response system. (If, for example, customers are restricted to "yes/no" questions, the automated response system can execute a single, unvarying call-flow routine that asks the answerer to press one touch-tone key to signify "yes" and another to signify "no.") If a recipient is not immediately reached— e.g., a telephone answering machine receives the message— information facilitating subsequent response may be appended to the message. Thus, in the case of telephone messages, detection of an answering machine may cause telephony server 147 to add a trailer to the message instructing the recipient to call a toll-free number to provide a response.

Multiple-question surveys are, of course, equally possible, as are questions involving more than two possible answers. These are handled simply by according the recipient more response options.

#### *4. Message Scheduling*

It may not be appropriate to transmit messages by certain modes during particular time periods at the recipient's location. These "blackout"

time periods may be established automatically by the invention, or may be designated by the customer or the recipient. In the case of customer designation, the customer may indicate blackout time periods for a particular message, or may permanently designate such periods for particular contacts  
5 (and particular communication modalities). Most commonly, permanently designated blackout periods are used to prevent messages from being sent by telephone or pager during times when the recipient is generally likely to be asleep or away from the communication modality. Message-specific blackout periods may be utilized by message senders familiar with the  
10 recipient's immediate schedule, or who do not wish to permanently establish blackout periods.

Conversely, the customer may specify particular allowed time windows within which a message must be delivered. Once again, these may be established permanently for particular contacts or "on the fly" for specific  
15 messages. Moreover, customers who are also potential message recipients can block messages in fax and phone modes during specified times by making appropriate "blackout" entries in his data record; such entries also operate to restrict the times during which a message may be transmitted. Thus, before allowing a message to be transmitted, transaction server checks for  
20 recipient restrictions specified in the message sender's data record as well as in the recipient's data record, if one exists.

Permanent blackout times or message windows for particular contacts are defined through the customer's interaction with transaction server 150, when the customer enters the information that will be stored in the contact's record in database 152*b*. For example, upon entering a telephone number for  
5 telephone contact, the customer may also specify a telephone blackout period and/or allowed time window, which are stored along with the telephone number in the contact record. The contact's local address information allows transaction server 150 to establish a time zone for the contact, which may also be stored in the record.

10 During message creation, the web page 155 may offer the customer the option to schedule message delivery. Upon selection of this option, the customer is allowed to define a time window — i.e., a time and date when message delivery will first be attempted, and when delivery should be  
15 completed. The customer may be queried whether it is more important to finish by the specified completion time or to start transmission by the specified start time. Based on these criteria, scheduler 180 queues the message for transmission, and transaction server 150 monitors its progress. Alternatively or in addition, the customer may be allowed to specify blackout periods during which message transmission will not be attempted. This time  
20 may be expressed as the local time of the recipient, in which case scheduler 180 determines the recipient's time zone from the address in his data record and schedules delivery accordingly.

Time-zone scheduling may be employed automatically. For example, if the customer authorizes immediate message delivery at a time that would be late at night where the recipient is located, or schedules message delivery for such a time, transaction server may cause the customer to be prompted with this information and asked to confirm or reschedule delivery.

### *5. Escalation*

Rather than send a message to a prospective recipient redundantly via multiple communication modalities, transaction server 150 may be configured to allow the customer to specify escalation rules for sequential transmission as necessary. The customer selects a plurality of communication modalities and/or contacts, and criteria in the form of rules governing their use. Typically, an escalation rule will specify resort to a different communication modality (or a different recipient) if delivery of the message is not confirmed by a specified time, or within a specified period, using the current communication modality.

Like scheduling restrictions, escalation rules may be defined permanently for a contact (and stored in database 152b) or may instead be defined for a particular message. Permanent escalation rules are once again specified through the customer's interaction with transaction server 150, when the customer enters the information that will be stored in the contacts' database records. For example, upon entering information facilitating contact

by more than one communication modality, the customer may be prompted to rank the modalities in order of preference, then to specify escalation rules linking sequentially ranked modalities. In the case of telephone delivery, for example, such a rule may take the form of "Proceed to facsimile

5 transmission if no answer within <x> minutes." If the customer selects the rule (he is of course free to decline to do so), the customer is prompted to specify a value for x. This process may continue for the various ranked modalities. The selected rules are then stored in the contact's database record, and when the customer next enters a message destined for that  
10 contact, the escalation rules may be applied automatically. The modality indicated in the record as most preferred will be employed by default if the customer specifies no modality for message delivery; if the customer specifies a modality somewhere within the rankings, the escalation rules will be sequentially applied from that point forward through the hierarchy.

15 Default message modalities and permanent escalation rules are particularly useful in the context of distribution lists, since the customer can simply enter a message and leave it to server 125 to deliver it to every person on a selected distribution list in accordance with each contact's escalation rules. On the other hand, the customer may also be given the  
20 opportunity to select message-specific escalation rules during message creation; this option is provided when the customer specifies more than one communication modality for a message, and is useful where no escalation



rules have previously been defined or to override defined escalation rules in particular instances.

To implement the escalation rules, the time period specified in a rule relevant to the initial message transmission is sent to scheduler 180. At the  
5 end of that time period following transmission, transaction server 150 determines whether the message has been received in the manner described above. If not, the escalation rule (defined in database 152*b* or in the transaction record for the particular message) is executed, and the message re-transmitted by a different modality. If further escalation rules remain for  
10 the message, the appropriate time period is once again provided to scheduler 180, and the flow sequence repeated.

It will therefore be seen that the foregoing represents a full-featured messaging system capable of operating in multiple communication modes and handling multiple message formats, all in accordance with variety types  
15 of customer-specified message criteria. The terms and expressions employed herein are used as terms of description and not of limitation, and there is no intention, in the use of such terms and expressions, of excluding any equivalents of the features shown and described or portions thereof, but it is recognized that various modifications are possible within the scope of the  
20 invention claimed.

What is claimed is:

## CLAIMS

1 1. A messaging system comprising:

2 a. a message server comprising a plurality of modalities for

3 transmitting messages;

4 b. an interface for receiving a message and a designation of at least

5 some of the transmission modalities;

6 c. a memory for storing escalation rules specifying sequential

7 transmission of the message by means of each of the designated

8 modalities upon occurrence of a specified condition; and

9 d. a routing facility, responsive to the escalation rules and to the

10 occurrence of the conditions, for causing the message to be

11 sequentially transmitted by the message server in accordance with

12 the escalation rules.

13  
1 2. The system of claim 1 wherein the condition associated with at least

2 some of the modalities is non-receipt of the message transmitted via said

3 modalities.

4

3. The system of claim 1 wherein the modalities comprise electronic mail, facsimile transmission, public telephone network, cellular telephone, pager, and postal mail.

4. The system of claim 3 wherein the condition associated with telephone transmission is non-receipt of the message, the system further comprising means for detecting said non-receipt.

5. The system of claim 1 further comprising means for notifying, by means of at least one of the transmission modalities, a source of a message that the message has been received.

6. The system of claim 1 wherein the interface comprises means for receiving escalation rules from a message sender.

7. The system of claim 1 wherein the escalation rules specify a default transmission modality, the routing facility causing the message to be transmitted via the default modality if no designation is received by the interface.

8. The system of claim 1 further comprising:

- a. means facilitating response to a received message, the message server receiving the responses; and

b. a memory for collecting records of the responses, the interface being configured to tabulate and present the records in a summary format.

9. The system of claim 1 wherein the interface is further configured to receive, from a message sender, a list of recipients for the message and escalation rules for each recipient, the routing facility causing the message to be transmitted to each recipient by the message server in accordance with the escalation rules.

10. The system of claim 1 wherein the interface is further configured to receive, from a message sender, a global list of potential message recipients and criteria associated with each potential recipient, the interface facilitating searching of the list based on specified criteria and identification of potential recipients whose recipient criteria match the specified criteria.

11. The system of claim 10 wherein the recipient criteria for each potential recipient include escalation rules for that potential recipient.

12. A messaging system comprising:

a. a message server comprising a plurality of modalities for transmitting messages;

- 4 b. an interface for receiving a message comprising a plurality of  
5 segments encoded in different formats, and a designation of at least  
6 some of the transmission modalities;
- 7 c. an analysis facility for (i) determining the segment formats, (ii)  
8 identifying, from among the designated transmission modalities, the  
9 modalities appropriate to the segments, and (iii) composing the  
10 segments into messages suitable for transmission by the identified  
11 modalities; and
- 12 d. a routing facility for causing at least some of the composed  
13 messages to be transmitted by the identified modalities.
- 14

1 13. The system of claim 12 wherein the interface is further configured to  
2 receive, from a message sender, a global list of potential message recipients  
3 and criteria associated with each potential recipient, the interface facilitating  
4 searching of the list based on specified criteria and identification of potential  
5 recipients whose recipient criteria match the specified criteria.

1 14. The system of claim 12 wherein the interface is further configured to  
2 receive, from a message sender, a global list of potential message recipients  
3 and criteria associated with each potential recipient, the recipient criteria for  
4 each potential recipient including allowed modalities for that potential  
5 recipient, the routing facility causing the message to be delivered to

6 designated ones of the potential recipients by means of the allowed  
7 modalities for said designated recipients.

1 15. The system of claim 12 further comprising:

- 2 a. means facilitating response to a received message, the message
- 3 server receiving the responses; and
- 4 b. a memory for collecting records of the responses, the interface
- 5 being configured to tabulate and present the records in a summary
- 6 format.

1 16. A messaging system comprising:

- 2 a. a message server comprising a plurality of modalities for
- 3 transmitting messages;
- 4 b. an interface for receiving a message and a designation of at least
- 5 one of the transmission modalities;
- 6 c. a memory for storing scheduling criteria governing use of the at
- 7 least one designated modality; and
- 8 d. a routing facility, responsive to the scheduling criteria, for causing
- 9 transmission of the message by means of the at least one
- 10 designated modality in accordance with the scheduling criteria
- 11 therefor.

1 17. The system of claim 16 wherein the scheduling criteria include at least  
 2 one of (a) blackout periods during which the at least one designated modality  
 3 may not be used and (b) time windows during which the at least one  
 4 designated modality may be used, the routing facility causing transmission to  
 5 occur at a time consistent with the scheduling criteria.

6

1 18. The system of claim 17 wherein the interface further receives a  
 2 designation of a recipient for the message and information indicative of a  
 3 location of the recipient, the system further comprising means for obtaining a  
 4 time of day at the location of the recipient and determining whether the  
 5 location time of day is consistent with the scheduling criteria.

6

1 19. The system of claim 16 wherein the interface is further configured to  
 2 receive the scheduling criteria from a message sender.

3

1 20. The system of claim 19 wherein the criteria comprise a time of day at  
 2 the location of the recipient, the interface receiving a designation of a  
 3 recipient for the message and information indicative of a location of the  
 4 recipient, the routing module being configured to obtain a time of day at the  
 5 location of the recipient and to cause transmission of the message at the  
 6 designated recipient-location time of day.

7

1 21. The system of claim 19 wherein the scheduling criteria include a  
2 transmission-start time, a transmission-end time, and a preference  
3 therebetween.

4  
1 22. The system of claim 16 wherein the interface is further configured to  
2 receive, from a message sender, a global list of potential message recipients  
3 and scheduling criteria associated with each potential recipient, the routing  
4 facility being responsive to the scheduling criteria and causing messages to  
5 be delivered to designated ones of the potential recipients in accordance with  
6 the scheduling criteria associated therewith.

7  
1 23. A messaging system comprising:

- 2 a. a message server comprising a plurality of communication  
3 modalities for transmitting messages;  
4 b. an interface for receiving (i) a message inviting a response, (ii) a  
5 plurality of recipients, and (iii) for each recipient, a designation of at  
6 least one of the communication modalities;  
7 c. a routing facility, responsive to the designation, for causing  
8 transmission of the message by means of the designated modalities,  
9 wherein  
10 d. the communication modalities are configured to remotely receive the  
11 responses from the recipients; and



e. the interface is configured to present a tabulated version of the responses.

24. The system of claim 23 wherein a plurality of modalities is designated and, for at least some of the modalities, the message comprises instructions facilitating later response by the recipient via at least one specified communication modality.

25. The system of claim 24 wherein the message server comprises a web server and at least one specified communication modality is a web page transmitted to the user and facilitating response selection and transmission of the response to the web server.

26. The system of claim 24 wherein the message server comprises a telephony server and at least one specified communication modality is telephone contact with the telephony server, the telephony server being configured to receive the response.

27. The system of claim 26 wherein the response is received by means of touch-tone pulses.

28. The system of claim 26 wherein the response is received by means of speech recognition.

3

1 29. The system of claim 23 wherein the interface presents the tabulated  
2 responses in the form of a web page.

3

1 30. A messaging system comprising:

2 a. a message server comprising a plurality of communication

3 modalities for transmitting messages, the modalities including

4 telephony, the message server comprising a telephony server;

5 b. an interface for receiving a message and a designation of at least

6 one of the communication modalities;

7 c. a routing facility, responsive to the designation, for causing

8 transmission of the message by means of the designated modalities;

9 wherein

10 d. the telephony server is configured to discriminate between

11 individuals and telephone-answering devices, and to detect receipt

12 of the message by an individual.

13

1 31. The system of claim 30 wherein the interface is configured to report

2 receipt of the message by an individual.

3

1 32. The system of claim 30 wherein the telephony server is configured to

2 append to the message, upon detection of a telephone-answering device,

instructions for subsequently establishing a telephone connection to the telephony server to confirm receipt of the message.

33. A method of transmitting messages, the method comprising the steps of:

- a. receiving a message and a designation of at least some of a plurality of transmission modalities;
- b. storing escalation rules specifying sequential transmission of the message by means of each of the designated modalities upon occurrence of a specified condition; and
- c. causing the message to be sequentially transmitted in accordance with the escalation rules.

34. The method of claim 33 wherein the condition associated with at least some of the modalities is non-receipt of the message transmitted via said modalities.

35. The method of claim 33 wherein the modalities comprise electronic mail, facsimile transmission, public telephone network, cellular telephone, pager, and postal mail.

36. The method of claim 35 wherein the condition associated with telephone transmission is non-receipt of the message, the method further comprising the step of detecting said non-receipt.

4

1 37. The method of claim 33 further comprising the step of notifying, via at  
2 least one of the transmission modalities, a source of a message that the  
3 message has been received.

4

1 38. The method of claim 33 wherein the escalation rules specify a default  
2 transmission modality, the message being transmitted via the default  
3 modality if no designation is received by the interface.

4

1 39. The method of claim 33 further comprising the steps of:  
2 a. facilitating response to a received message;  
3 b. collecting records of the responses; and  
4 c. tabulating and presenting the records in a summary format.

5

1 40. The method of claim 33 further comprising the steps of:  
2 a. receiving, from a message sender, a list of recipients for the  
3 message and escalation rules for each recipient; and  
4 b. causing the message to be transmitted to each recipient by the  
5 message server in accordance with the escalation rules.

6

1 41. The method of claim 33 further comprising the steps of:  
2 a. receiving, from a message sender, a global list of potential message  
3 recipients and criteria associated with each potential recipient; and

- 4 b. facilitating searching of the list based on specified criteria and  
5 identification of potential recipients whose recipient criteria match  
6 the specified criteria.

7  
1 42. The method of claim 41 wherein the recipient criteria for each potential  
2 recipient include escalation rules for that potential recipient.

3  
1 43. A method of messaging, the method comprising the steps of:

- 2 a. receiving a message comprising a plurality of segments encoded in  
3 different formats, and a designation of at least some of a plurality of  
4 transmission modalities;  
5 b. determining the segment formats;  
6 c. identifying, from among the designated transmission modalities, the  
7 modalities appropriate to the segments;  
8 d. composing the segments into messages suitable for transmission by  
9 the identified modalities; and  
10 e. causing at least some of the composed messages to be transmitted  
11 by the identified modalities.

12  
1 44. The method of claim 43 further comprising the steps of:

- 2 a. receiving, from a message sender, a global list of potential message  
3 recipients and criteria associated with each potential recipient; and

- 4 b. facilitating (i) searching of the list based on specified criteria and (ii)  
5 identification of potential recipients whose recipient criteria match  
6 the specified criteria.

7  
1 45. The method of claim 43 further comprising the steps of:

- 2 a. receiving, from a message sender, a global list of potential message  
3 recipients and criteria associated with each potential recipient, the  
4 recipient criteria for each potential recipient including allowed  
5 modalities for that potential recipient; and  
6 b. causing the message to be delivered to designated ones of the  
7 potential recipients by means of the allowed modalities for said  
8 designated recipients.

9  
1 46. The method of claim 33 further comprising the steps of:

- 2 a. facilitating responses to a message; and  
3 b. collecting records of the responses; and  
4 c. tabulating and presenting the records in a summary format.

5  
1 47. A method of messaging, the method comprising the steps of:

- 2 a. receiving a message and a designation of at least one of a plurality  
3 of transmission modalities;  
4 b. storing scheduling criteria governing use of the at least one  
5 designated modality; and

6 c. causing transmission of the message by means of the at least one  
7 designated modality in accordance with the scheduling criteria  
8 therefor.

9  
1 48. The method of claim 47 wherein the scheduling criteria include at least  
2 one of (a) blackout periods during which the at least one designated modality  
3 may not be used and (b) time windows during which the at least one  
4 designated modality may be used, transmission occurring at a time  
5 consistent with the scheduling criteria.

6  
1 49. The method of claim 48 further comprising the steps of:  
2 a. receiving a designation of a recipient for the message and  
3 information indicative of a location of the recipient;  
4 b. obtaining a time of day at the location of the recipient; and  
5 c. determining whether the location time of day is consistent with the  
6 scheduling criteria.

7  
1 50. The method of claim 47 wherein the criteria comprise a time of day at  
2 the location of the recipient, and further comprising the steps of:  
3 a. receiving a designation of a recipient for the message and  
4 information indicative of a location of the recipient;  
5 b. obtaining a time of day at the location of the recipient; and

6 c. cause transmission of the message at the designated recipient-  
7 location time of day.  
8

1 51. The method of claim 47 wherein the scheduling criteria include a  
2 transmission-start time, a transmission-end time, and a preference  
3 therebetween.  
4

1 52. The method of claim 47 further comprising the steps of:

- 2 a. receiving, from a message sender, a global list of potential message  
3 recipients, scheduling criteria being associated with each potential  
4 recipient; and  
5 b. causing messages to be delivered to designated ones of the  
6 potential recipients in accordance with the scheduling criteria  
7 associated therewith.  
8

1 53. A method of messaging, the method comprising the steps of:

- 2 a. providing a plurality of communication modalities;  
3 b. receiving (i) a message inviting a response, (ii) a plurality of  
4 recipients, and (iii) for each recipient, a designation of at least one  
5 of a plurality of communication modalities;  
6 c. causing transmission of the message by means of the designated  
7 modalities;



- d. causing the communication modalities to remotely receive the responses from the recipients; and
- e. presenting a tabulated version of the responses.

54. The method of claim 53 wherein a plurality of modalities is designated and, for at least some of the modalities, the message comprises instructions facilitating later response by the recipient via at least one specified communication modality.

55. The method of claim 53 wherein at least one specified communication modality is a web page transmitted to the user and facilitating response selection and transmission of the response.

56. The method of claim 53 wherein at least one specified communication modality is a telephony server, the telephony server being configured to receive the response.

57. The method of claim 56 wherein the response is received by means of touch-tone pulses.

58. The method of claim 56 wherein the response is received by means of speech recognition.

59. The method of claim 53 wherein the tabulated responses are presented  
in the form of a web page.

60. A method of messaging, the method comprising the steps of:

a. providing a plurality of communication modalities for transmitting  
messages, the modalities including a telephony server;

b. receiving a message and a designation of at least one of the  
communication modalities; and

c. causing transmission of the message by means of the designated  
modalities;

wherein

d. the telephony server is configured to discriminate between  
individuals and telephone-answering devices, and to detect receipt  
of the message by an individual.

61. The method of claim 60 further comprising the step of reporting receipt  
of the message by an individual.

62. The method of claim 60 wherein the telephony server is configured to  
append to the message, upon detection of a telephone-answering device,  
instructions for subsequently establishing a telephone connection to the  
telephony server to confirm receipt of the message.

## ABSTRACT

Transmission of messages composed on one or more input devices to a single or multiple recipients by means of one or plural communication modes is facilitated. Such communication modes may include conventional or wireless telephone, facsimile transmission, pager, e-mail, postal mail or courier. Thus, a message may be directed to a single recipient via multiple modes, such as e-mail and fax, in order to ensure the earliest possible receipt of the message; or may be directed to multiple recipients by a single mode or by different modes. In the case of multiple-mode delivery, "escalation" rules may specify conditions under which different delivery modes may be sequentially employed. Automatic follow-up to determine whether a message has been received, as well as automatic sender notification upon confirmation of receipt, may be employed. The system is capable of sending messages having embedded questions, and facilitating multi-question surveys.

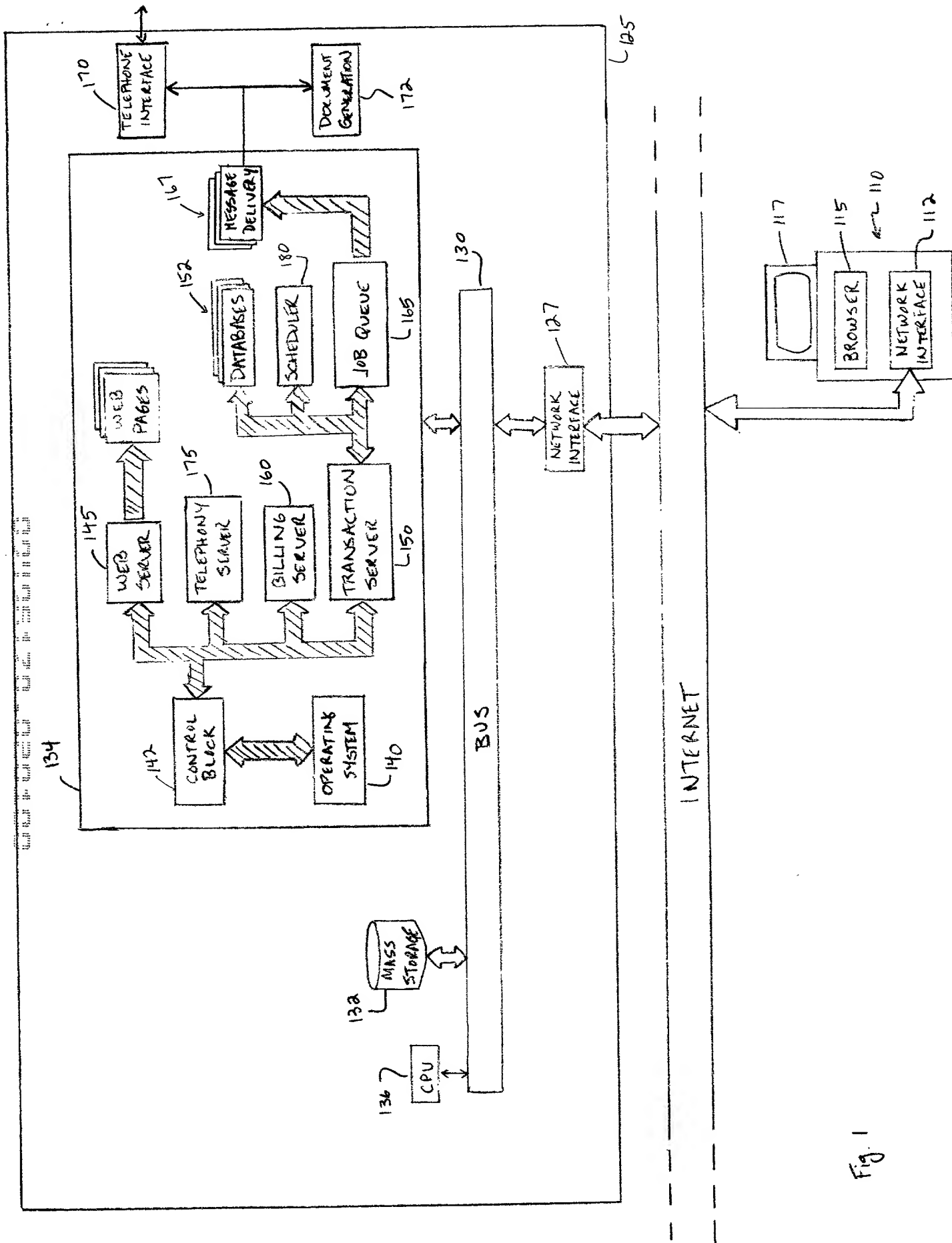


Fig. 1

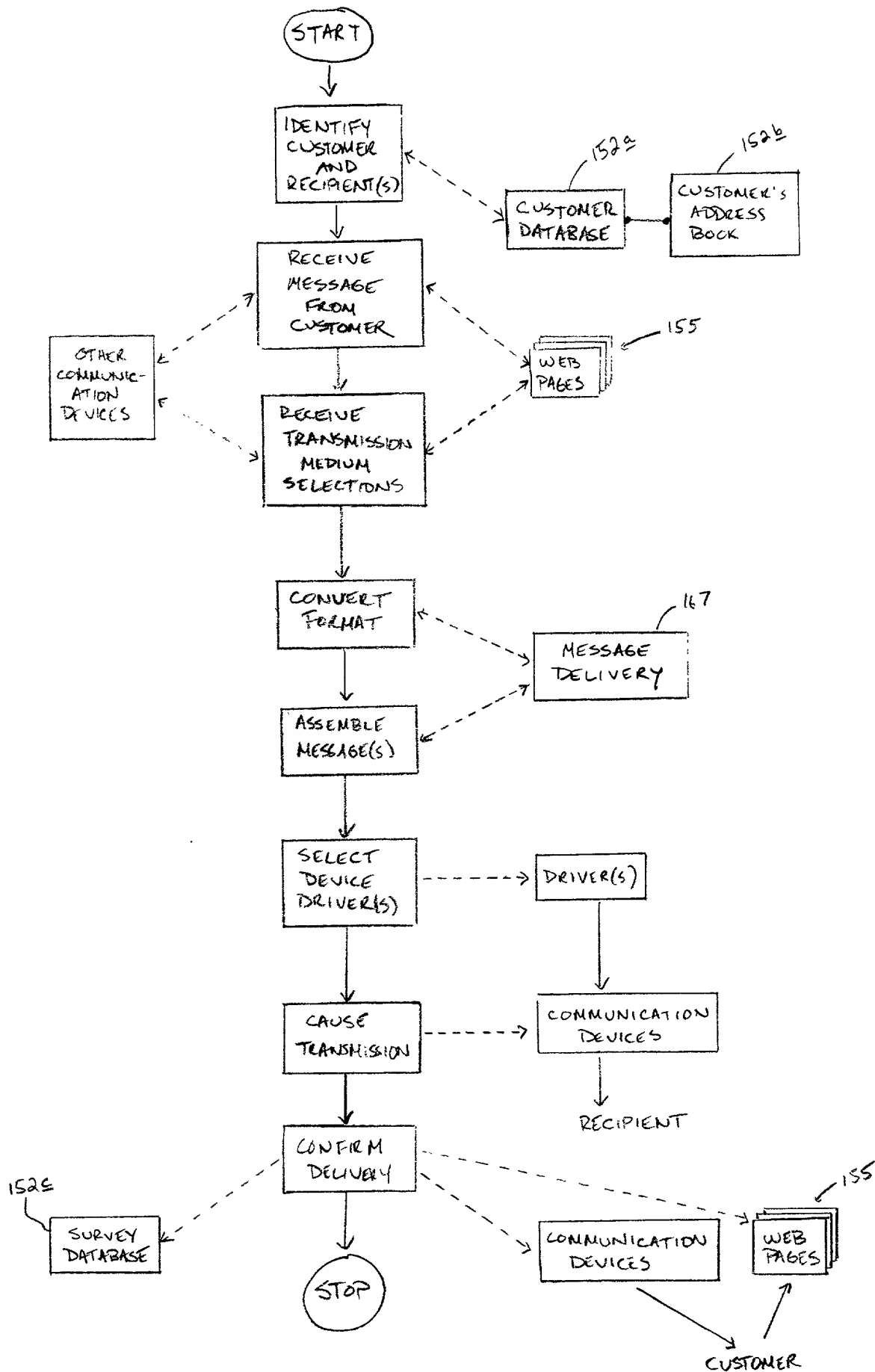


Fig. 2A

← ● BACK

SAVE DRAFT

NEXT ● →

1/25/01

Select Distribution List

☒ Capital One Account

☐ Central Region

☐ Eastern Region

☐ Head Quarters

☐ Southern Region

☐ Western Region

Select Contacts

☒ Campbell, Elizabeth

☒ Chin, Edward

☒ Coolidge, Jodie

☒ Edwards, Susan

☒ Gonzales, Fred

☒ Hurst, Collin

☒ Kaplan, Ernie

☒ Kendall, Josephine

☒ London, Jack

☒ Moses, Dan

☒ Randall, Kenny

☒ Song, Charlie

← ● BACK

NEXT ● →

Fig. 2B

← BACK

SAVE DRAFT

NEXT →

### Select Delivery Methods

Abbreviation Key: (O)ffice (C)ellular (H)ome (P)ager

	Phone	Fax	Pager	E-mail	US Mail	Overnight
Campbell, Elizabeth	<input checked="" type="checkbox"/> O <input type="checkbox"/> C <input checked="" type="checkbox"/> H	<input type="checkbox"/> O <input type="checkbox"/> H	<input type="checkbox"/> P	<input checked="" type="checkbox"/> O <input type="checkbox"/> H		
Chin, Edward	<input checked="" type="checkbox"/> O <input type="checkbox"/> C <input type="checkbox"/> H <input type="checkbox"/> O <sub>2</sub>	<input checked="" type="checkbox"/> O <input type="checkbox"/> H	<input type="checkbox"/> P	<input checked="" type="checkbox"/> O <input type="checkbox"/> H		
Coolidge, Jodie	<input checked="" type="checkbox"/> O <input type="checkbox"/> C	<input type="checkbox"/> O	<input type="checkbox"/> P	<input checked="" type="checkbox"/> O		
Edwards, Susan	<input checked="" type="checkbox"/> O <input type="checkbox"/> C	<input checked="" type="checkbox"/> O <input type="checkbox"/> H	<input checked="" type="checkbox"/> P	<input checked="" type="checkbox"/> O		
Gonzales, Fred	<input checked="" type="checkbox"/> O <input type="checkbox"/> C	<input type="checkbox"/> O	<input type="checkbox"/> P	<input checked="" type="checkbox"/> O		
Hurst, Collin	<input checked="" type="checkbox"/> O <input checked="" type="checkbox"/> C <input type="checkbox"/> H	<input checked="" type="checkbox"/> O		<input checked="" type="checkbox"/> O <input type="checkbox"/> H		
Kaplan, Ernie	<input checked="" type="checkbox"/> O <input type="checkbox"/> C <input type="checkbox"/> C <sub>2</sub>	<input type="checkbox"/> O		<input checked="" type="checkbox"/> O		
Kendall, Josephine	<input checked="" type="checkbox"/> O <input type="checkbox"/> H <input type="checkbox"/> H <sub>2</sub>	<input type="checkbox"/> H		<input checked="" type="checkbox"/> H		
London, Jack	<input checked="" type="checkbox"/> O <input checked="" type="checkbox"/> C	<input checked="" type="checkbox"/> O		<input checked="" type="checkbox"/> O		
Moses, Dan	<input checked="" type="checkbox"/> O <input type="checkbox"/> C	<input type="checkbox"/> O	<input type="checkbox"/> P	<input checked="" type="checkbox"/> O <input checked="" type="checkbox"/> H		
Randall, Kenny	<input checked="" type="checkbox"/> O <input type="checkbox"/> H	<input type="checkbox"/> O	<input checked="" type="checkbox"/> P	<input type="checkbox"/> O		
Song, Charlie	<input checked="" type="checkbox"/> O <input checked="" type="checkbox"/> C <input type="checkbox"/> O <sub>2</sub>	<input checked="" type="checkbox"/> O	<input type="checkbox"/> P	<input checked="" type="checkbox"/> O <input type="checkbox"/> H		

← BACK

NEXT →

Fig. 2C

← BACK

Fax (3 of 5)  
E-mail (10 of 10)  
Pager (3 of 3)

**Phone**  
Requested 14  
Successful 14  
Failed 0  
Remaining 0  
Reply Yes 10  
Reply No 4  
Not Responded 0

**E-mail**  
Requested 10  
Successful 10  
Failed 0  
Remaining 0  
Reply Yes 6  
Reply No 4  
Not Responded 0

**Fax**  
Requested 5  
Successful 3  
Failed 0  
Remaining 2

**Pager**  
Requested 3  
Successful 3  
Failed 0  
Remaining 0

**Response**  
**Question: Will you**  
Yes (16 of 24)  
No (8 of 24)  
None (0 of 24)

#### Message

**Subject:** Urgent Message - Need to Reschedule Meeting  
**Body:** Due to a serious problem at "Capital One", our meeting needs to be postponed for a few days. Cancel all existing travel plans immediately to avoid penalty charges.  
  
I would like to reschedule this meeting for the last Tuesday of this month.  
  
As before, the agenda will include our revenue plan for the quarter and the launch of our new service.  
  
The MessageBlaster system will ask you to confirm your availability for the new date.  
  
Thank you  
**Cost:** \$3.70

#### Options

**Urgent:** YES  
**Fax Cover Sheet:** YES  
**Return E-mail:** "Henry McMillan" <hmcmillan@teliport.com>  
**Pager Callback#:** 9786700023

Fig. 2D



**DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION**

As a below-named inventor, I hereby declare that:

My residence, post-office address, and citizenship are as stated below next to my name.

I believe I am an original, first, and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled MULTI-MODE MESSAGE ROUTING AND MANAGEMENT, the specification of which is attached hereto and identified by Cesari and McKenna File No. 109140-0001.

I hereby state that I have reviewed and understand the contents of the above-identified application specification, including the claims, as amended by any amendment specifically referred to herein.

I acknowledge the duty to disclose all information known to me that is material to patentability in accordance with Title 37, Code of Federal Regulations, §1.56.

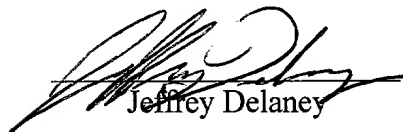
I hereby claim foreign priority benefits under Title 35, United States Code §119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate filed by me on the same subject matter having a filing date before that of the application on which priority is claimed: None.

I hereby claim the benefit under Title 35, United States Code §119(e) of the following U.S. provisional application: None.

I hereby claim the benefit under Title 35, United States Code §120, of the United States Application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose all information that is material to patentability in accordance with Title 37, Code of Federal Regulations, §1.56, and which became available to me between the filing date of the prior application and the national or PCT international filing date of this application: None.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

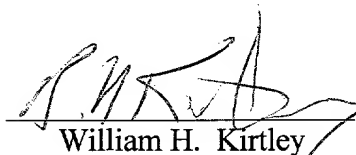
I hereby appoint Michael E. Attaya, Reg. No. 31,731; Charles J. Barbas, Reg. No. 32,959; Joseph H. Born, Reg. No. 28,283; Robert A. Cesari, Reg. No. 18,381; Yong S. Choi, Reg. No. 43,324; Brian C. Dauphin, Reg. No. 40,983; Steven J. Frank, Reg. No. 33,497; Christopher K. Gagne, Reg. No. 36,142; A. Sidney Johnston, Reg. No. 29,548; William A. Loginov, Reg. No. 34,863; John F. McKenna, Reg. No. 20,912; Rama B. Nath, Reg. No. 27,072; Martin J. O'Donnell, Reg. No. 24,204; Thomas C. O'Konski, Reg. No. 26,320; Michael R. Reinemann, Reg. No. 38,280; Rita M. Rooney, Reg. No. 30,585; Heather B. Shapiro, Reg. No. 41,305; Patricia A. Sheehan, Reg. No. 32,301; and Joseph Stecewycz, Reg. No. 34,442, Cesari and McKenna, LLP, 30 Rows Wharf, Boston, Mass. 02110, jointly, and each of them severally, my attorneys and attorney, with full power of substitution, delegation and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent and to transact all business in the Patent and Trademark Office connected therewith. Please direct all telephone calls to Steven J. Frank at (617) 951-2500. Please address all correspondence to Steven J. Frank.

 1/31/00  
Jeffrey Delaney Date

Residence: 11 St. Francis Pl.  
Hudson, NH 03051

Citizenship U.S.A.

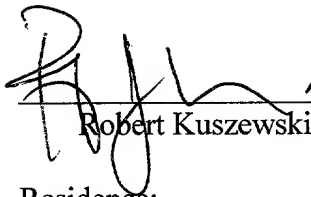
Post Office Address: Same as above

 1/31/00  
William H. Kirtley Date

Residence: 24 Upton Street #1  
Boston, MA 02118

Citizenship U.S.A.

Post Office Address: Same as above

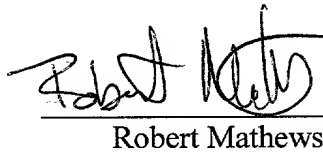
  
Robert Kuszewski

31 JANUARY 2000  
Date

Residence: 155 Wright Street  
Arlington, MA 02474

Citizenship U.S.A.

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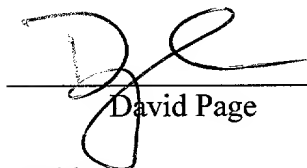
  
Robert Mathews

1/31/2000  
Date

Residence: 216 School Street  
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Citizenship Canada

Post Office Address: Same as above

  
David Page

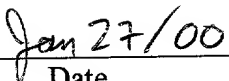
1/27/00  
Date

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Post Office Address: Same as above

  
\_\_\_\_\_  
Martin Sarabura

  
\_\_\_\_\_  
Date

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ON LOR 1RO  
CANADA

Citizenship Canada

Post Office Address: Same as above

\_\_\_\_\_  
Gregory Warden

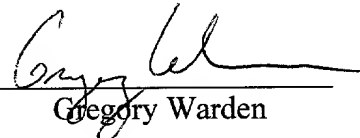
\_\_\_\_\_  
Date

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<u>Martin Sarabura</u>	<u>Date</u>
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<u> Gregory Warden</u>	<u>1/31/00 Date</u>
Residence:	52 Hoitt Road Belmont, MA 02478
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